UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF MISSOURI
EASTERN DIVISION

MONSANTO COMPANY and
MONSANTO TECHNOLOGY LLC,

Plaintiffs,

v.

E.I. DU PONT DE NEMOURS AND CO. and
PIONEER HI-BRED INTERNATIONAL, INC.,

Defendants.

Case No. 09-cv-0686 (ERW)

DECLARATION OF PROFESSOR VIRGINIA WALBOT

Exhibit A

Exhibit A

Curriculum Vitae
Professor Virginia Walbot

Education

A.B. with Distinction & Honors in Biology, Stanford University, 1967
M. Phil. in Biology, Yale University, 1969
Ph.D. in Biology, Yale University, 1972
NIH Postdoctoral Fellow, Department of Biochemistry, University of Georgia, 1972-1975

Positions Held

Assistant then Associate Professor of Biology, Washington University, St. Louis, Missouri, 1975 - 1980
Adjunct Associate Professor of Agronomy, University of Missouri, Columbia, Missouri, 1979 - 1990
Associate then Full Professor, Department of Biology, Stanford University, 1981 - present
Affiliated Faculty Member, Woods Institute, Stanford 9/1/2009 – 8/31/2011

Fellowships and Honors

National Science Foundation Predoctoral Fellow, 1969-1972
National Institutes of Health Postdoctoral Fellow, 1972-1975
Elected Fellow, 1981, American Association for the Advancement of Science
Belk Award, 1985, Miami University of Ohio
Lamb Award, 1985, University of Nebraska
Guggenheim Fellow and Visiting Scientist, C.S.I.R.O., Canberra, Australia, 1987
Eppley Award, 1993
National Geographic Exploration Award, 1998
Joan V. Wood Lectureship, Indiana University, 1999
Hageman Lectureship, Kansas State University, 2001
Elected corresponding member Mexican Academy of Sciences (AMC), 2004

Editorial Positions

Editorial Board, *Plant Physiology*, 1976-1980
Associate Editor, *Developmental Biology*, 1981-1988
Editorial Board, *Trends in Genetics*, 1985-1992
Associate Editor, *Annual Review of Plant Physiology and Plant Molecular Biology*, 1982-1998
Editorial Board, *Genes & Development*, 1987-1994
Editorial Board, *Current Topics in Developmental Biology*, 1989-2007
Advisory Board, *Genome Biology*, 1999-present
Highlights Advisory Panel, *Nature Reviews Genetics*, 2002-present
Editorial Board, *BMC Genetics*, 2006-2008
Editorial Board, *Journal of Biology*, 2008-present, now called *BMC Biology*

Society Service and Panel Memberships

Member, Committee on Opportunities in Science, American Association for the Advancement of Science, 1971-1974
Elected, Member-at-large, Board of Trustees, Society for Developmental Biology, 1974-1977
Member, National Science Foundation Panel on Developmental Biology, 1980-1983
Elected, Board of Directors, Plant Molecular Biology Association, 1980-1983
Member, Board on Agriculture, National Research Council, 1982-1987
Member, Panel A Personnel, American Cancer Society, 1983-1988
Member, NIH-GMS Genetic Basis of Disease Review Panel, 1986-1988
Elected, Board of Directors, Genetics Society, 1986-1989
Elected, Nominating Committee A.A.A.S. Biological Sciences, 1990-1994; Chair, 1993-1994
Elected, Board of Directors, International Society for Plant Molecular Biology, 1991-1994
Appointed, Committee on Biodiversity, American Institute of Biological Sciences, 1993-1996
Elected, Board of the DNA Methylation Society, 1998-2001
Elected, Maize Genetics Executive Committee, 2000-2003
Elected, Member-at-Large of AAAS Section G, Biological Sciences 2002-2006 & President 2007
Elected, Treasurer, DNA Methylation Society, 2004-2006
Elected, President of Section G, Biological Sciences, of the AAAS 2007
Elected, Maize Genetics Executive Committee, 2007-2011

Advisory Activities

Ad hoc reviewer for Cell, EMBO J., PNAS, Plant Cell, Plant Journal, Plant Physiology, Plant Molecular Biology, Molecular Cell, Genetics, Science, and Nature
Ad hoc grant reviewing for the NIH, NSF, DOE, USDA, Marsden Fund, Human Frontiers
Board of Directors, Pioneer Hi-Bred International, Inc. 1985 - 1999
External Examiner, Program in Molecular Biotechnology, Chinese University of Hong Kong 1999-2002
Non-Resident Fellow, Noble Foundation 2000-2005
Consulting for the Rockefeller Foundation and numerous US and international companies in the area of plant biotechnology
Member of the Research Coordination Network "Deep Gene" 2000-2005
Member, Advisory Board, Maize Genetics Database (MGdB), 2002-2005
Member, Advisory Board, Plant Sciences Institute, Iowa State University 2002-2009

Recent Activities at Stanford University

Elected, Faculty Senate 1999-2001 and Committee on Committees, 2000-2001
Teacher in Science-Math-Engineering core for non-science majors, 1997-1999
Chair of the Committee on Plant Growth Facilities 1995-present
Chair, Biology Department Undergraduate Studies Committee, 2004 – 2009
Appointed to Curriculum Committee, 2008-2009 (one year replacement person)
Current teaching of two courses per year
- Freshman Seminar reading landmark papers in biotechnology and discussing societal implications
- Plant Genetics, graduate and undergraduate course with lab
- Advanced Plant Biology seminar every quarter

Elected, Faculty Senate 2009-2011
Elected to the Steering Committee (StC) of the 42nd Faculty Senate, 2009 – 2010

Teaching Interests

I am particularly concerned about scientific literacy, and consequently have volunteered to develop new curriculum for non-science students and professional school students at Stanford. This interest started at Washington University where Joe Varner and I taught a very successful course on plants, food, and people that allowed us to introduce students to human nutrition, metabolism, plant genetics, plant structure and fibers, and secondary products as medicines. I have presented many of my current lectures at public forums in which I encourage a discussion of the science underlying transgenic food. Recent lectures have been at the Smithsonian, AAAS meeting, parent orientation at Stanford, and local public services clubs including dahlia societies.

Current Grant Support

NSF Plant Genomics Research Program 2007 – 2012 Cell Fate Acquisition in Maize Anthers, PI with Zac Cande, coPI
USDA 2008 – 2011 Functional Genomics of UV-B Signalling in Maize
SGER NSF 2009 – 2010 Monitoring maize and *Ustilago maydis* RNA and protein expression during tassel infections

Current Lab Members

Gillian Nan, Ph.D. LSRAII Anther development genes, *Mu* tagging of key genes
Dave Skibbe, Ph.D. Postdoctoral fellow Proteomics of maize anthers, *Mu* active vs. inactive lines and tapetal mutants
Dong Xue Wang, Ph.D. Postdoctoral fellow *ms8, ms775, ms10* analysis using confocal microscopy, transcriptome profiling and proteomics
Tim Kelliher, graduate student Transcriptome profiling of cell types from developing anthers
Darren Morrow, B.S. LSRAII Transcriptome profiling in developing anthers
John Fernandes, B.S. LSRAII Bioinformatics Specialist
Alex Bloom, administrative assistant
Undergraduate students, lab work: Linda Nyguen, Lan Mai, Jeffrey Vides, Sam Pimentel, Fausto Bustos, Conor Doherty, Ryan Kent
Undergraduate students, field/corn genetics work: Anna Hallingstad, Scott Loh, Shu Yi Zhang

Publications

Books

V. Walbot and N. Holder. 1987. **Developmental Biology**. Random House, New York, 751 pages. A college textbook.
M. Freeling and V. Walbot, editors. 1993. **The Maize Handbook**. Springer-Verlag, New York, 759 pages. A comprehensive guide to genetic, cell biology, developmental, tissue culture, and molecular techniques applied to maize. 1994 paperback edition of the same volume.

Research and Review Articles, 2000 - 2010

Rudenko, G. N. and V. Walbot. 2010. Detection of sequences arranged in inverted repeats in genomic DNA. In preparation.

Rudenko, G. N. and V. Walbot. 2010. Alternative splicing and recoding diversify expression of a eukaryotic transposase gene. In preparation.

244. Wang, D.-X. J. A. Oses-Prieto, K. H. Li, J. F. Fernandes, A. L. Burlingame, and V. Walbot. 2010. Male sterility 8 mutation of maize disrupts the temporal progression of the transcriptome and results in mis-regulation of metabolic functions. In press. **Plant Journal**, July 2010.

243. Qüesta, J. I. , V. Walbot and P. Casati. 2010. Mutator transposon activation after UV-B involves chromatin remodeling and DNA demethylation. **Epigenetics** 5: 353-363.

242. Skibbe, D. S., G. Doehlemann, J. Fernandes and V. Walbot. 2009. Maize tumor formation after *Ustilago maydis* infection requires organ-specific gene expression by both partners. **Science** 328: 89 – 92.

241. Skibbe, D. S.and V. Walbot. 2009. **Gene Expression. In Maize Handbook - Volume II**: Genetics and Genetics and Genomics, J.L. Bennetzen and S. Hake, eds (New York: Springer), pp. 597-607.

240. Walbot, V. 2009. 10 Reasons to be tantalized by the B73 maize genome. Introductory piece for a special volume on the maize genome. **PLoS Genet,** 5: e1000723. doi:10.1371/journal.pgen.1000723 Editorial

239. Soderlund, C., A. Descour, D. Kudrna, M. Bomhoff, L. Boyd, J. Currie, A. Angelova, K. Collura, M. Wissotski, E. Ashley, D. Morrow, J. Fernandes, V. Walbot, and Y. Yu. 2009. Sequencing, mapping and analysis of 27,455 maize full-length cDNAs. **PLoS Genetics** 5: e1000740. doi:10.1371/journal.pgen.1000740

238. Nan, G.-L. and V. Walbot. 2009. Nonradioactive genomic DNA blots for detection of low abundant sequences in transgenic maize. In: **Transgenic Maize: Methods and Protocols**, ed. M. P. Scott, pp. 113-122.

237. Nan, G.-L. and V. Walbot. 2009. Plasmid rescue: recovery of flanking genomic sequences from transgenic transposon insertion sites. In: **Transgenic Maize: Methods and Protocols**, ed. M. P. Scott, pp. 101-109.

236. Walbot, V. and D. S. Skibbe. 2010. Maize host requirements for *Ustilago maydis* tumor induction. **Sexual Plant Reproduction** 23: 1-13.

235. Johnson, C. A. Kasprzewska, K. Tennessen, J. Fernandes, G. Nan, V. Walbot, V. Sundaresan, V. Vance and L. H. Bowman. 2009. Clusters and superclusters of phased small RNAs in the developing inflorescence of rice. **Genome Research** 19: 1429-1440. doi:10.1101/gr.089854.108

234. Skibbe, D. S., J. F. Fernandes, K. Medzihradszky, A. L. Burlingame, and V. Walbot. 2009. Mutator transposon activity reprograms the transcriptome and proteome of developing maize anthers. **Plant J.** 59: 622-633. doi: 10.1111/j.1365-313X.2009.03901.x**.**

233. Walbot, V. 2009. Are we training pit-bulls to review our manuscripts? **Journal of Biology** 8: 24-26. doi:10.1186/jbiol125 Commentary.

232. Ma, J., D. S. Skibbe, J. Fernandes, and V. Walbot. 2008. Male reproductive development: Gene expression profiling of maize anther and pollen ontogeny. **Genome Biology** 9:R181 doi:10.1186/gb-2008-9-12-r181.

231. Casati, P. and V. Walbot. 2008. Maize lines expressing RNAi to chromatin remodeling factors are similarly hypersensitive to UV-B radiation but exhibit distinct transcriptome responses. **Epigenetics** 3: 216-229.

230. Fernandes, J., D. J. Morrow, P. Casati, and V. Walbot. 2008. Distinctive transcriptome responses to adverse environmental conditions in *Zea mays* L. **Plant Biotechnology Journal** 6: 782-798.

229. Walbot, V. 2008. Maize genome in motion. **Genome Biology** 9:303doi:10.1186/gb-2008-9-4-303

228. Casati, P., M. Campi, F. Chu, N. Suzuki, D. Maltby, S. Guan, A. L. Burlingame, and V. Walbot. 2008. Histone acetylation and chromatin remodeling are required for UV-B–dependent transcriptional activation of regulated genes in maize. **Plant Cell** 20: 827-842.

227. Lawrence, C. J. and V. Walbot. 2007. Translational genomics for bioenergy production from fuelstock grasses: Maize as the model species. **Plant Cell** 19: 2091-2094.

226. Blanding, C. R., S. J. Simmons, P. Casati, V. Walbot, and A. E. Stapleton. 2007. Coordinated regulation of maize genes during increasing exposure to ultraviolet radiation: identification of ultraviolet-responsive genes, functional processes and associated potential promoter motifs. **Plant Biotechnology Journal** 5: 677-695.

225. Ma, J., D. Duncan, D. J. Morrow, J. Fernandes, and V. Walbot. 2007. Transcriptome profiling of maize anthers using genetic ablation to analyze pre-meiotic and tapetal cell types. **Plant Journal** 50: 637-648.

224. Kirst, M., R. Caldo, P. Casati, G. Tanimoto, V. Walbot, R. P. Wise, and E. S. Buckler. 2006. Genetic diversity contribution to errors in short oligonucleotide microarray analysis. **Plant Biotechnology Journal** 4: 489-498.

223. Ma, J., D .J. Morrow, J. Fernandes, V. Walbot. 2006. Comparative profiling of the sense and antisense transcriptome of maize lines. **Genome Biology** 7:R22 doi:10.1186/gb-2006-7-3-r22

222. Casati, P., A. E. Stapleton, J. E. Blum, and V. Walbot. 2006. Genome-wide analysis of high altitude maize and gene knockdown implicates chromatin remodeling proteins in response to UV-B. **Plant Journal** 46: 613-627.

221. Rudenko, G. N., A. Ono, and V. Walbot. 2006. An early excision variant of the *MuDR/Mu* transposon family is not associated with a local duplication of the *bz1::Mu1* allele. **Maydica** 51: 227-232. Don Duvick memorial issue.

220. Rudenko, G. N., G.-I. Nan, and V. Walbot. 2005. Progress and perspectives in maize gene discovery. **Maydica** 50: 393-404. Special 50th anniversary volume, invited paper.

219. Walbot, V. 2005. OBPC Symposium: Maize 2004 & Beyond - Regulation of the *MuDR/Mu* transposable elements of maize and their practical uses. **In vitro Cell. Dev. Biol.-Plant** 41: 374-377.

218. Casati, P., X. Zhang, A. L. Burlingame, and V. Walbot. 2005. Analysis of leaf proteome after UV-B irradiation in maize lines differing in sensitivity. **Mol. Cell. Proteomics** 4: 1673-1685.

217. Casati, P. and V. Walbot. 2005. Differential accumulation of maysin and rhamnosylisorientin in leaves of high altitude landraces of maize after UV-B exposure. **Plant Cell Environment** 28: 788-799. doi:10.1111/j.1365-3040.2005.01329.x

216. Casati, P. and V. Walbot. 2004. Crosslinking of ribosomal proteins to RNA *in vivo* after UV-B irradiation of maize leaves. **Plant Physiology** 136: 3319-3332.

215. Fernandes, J., Q. F. Dong, B. Schneider, D. J. Morrow, G. L. Nan, V. Brendel, and V. Walbot. 2004. Genome-wide mutagenesis of *Zea mays* L. using *RescueMu* transposons. **Genome Biology** 5:82 doi:10.1186/gb-2004-5-10-r82

214. Walbot, V. 2004. Genomic, chromosomal and allelic assessment of the amazing diversity of maize. **Genome Biology** 5:328 doi:10.1186/gb-2004-5-6-328

213. Blum, J. E., P. Casati, V. Walbot, and A. E. Stapleton. 2004. Split-plot microarray design allows sensitive detection of expression differences after ultraviolet radiation in the inbred parental lines of a key maize mapping population. **Plant, Cell Environment** 27: 1374-1386.

212. Goodman, C. D., P. Casati, and V. Walbot. 2004. A multidrug-resistance associated protein involved in anthocyanin transport In *Zea mays*. **Plant Cell** 16: 1812-1826.

211. Casati, P. and V. Walbot. 2004. Rapid molecular responses of maize to UV-B: gene expression profiling in irradiated and shielded tissues. **Genome Biology** 5:R16

210. Pairoba, C. F. and V. Walbot. 2004. Post-transcriptional regulation of expression of the maize *Bronze2* gene of *Zea mays* L. **Plant Molecular Biology** 53: 75-86.

209. Kim, S.-H. and V. Walbot. 2003. Structural and functional analysis of antisense *MuDR* transcripts: insensitivity of maize Mutator transposon activities to endogenous and transgene-encoded antisense RNA. **Plant Cell** 15: 2430-2447.

208. Casati, P. and V. Walbot. 2003. Gene expression profiling in response to ultraviolet radiation in *Zea mays* genotypes with varying amounts of flavonoids. **Plant Physiology** 132: 1739-1754.

207. Walbot, V. and M. M. Evans. 2003. Unique features of the plant life cycle and their consequences. **Nature Reviews Genetics** 4: 369 -379.

206. Dong, Q. F., L. Roy, M. Freeling, V. Walbot and V. Brendel. 2003. ZmDB, an integrated database for maize genome research. **Nucl. Acids Res**. **31:** 244-247.

205. Rudenko, G. N., A. Ono, and V. Walbot. 2003. Initiation of silencing of maize *MuDR/Mu* transposable elements. **Plant J.** 33: 1013-1025.

204. Lunde, C. F., D. R. Morrow, L. M. Roy and V. Walbot. 2003. Progress in Maize Gene Discovery: a project update. **Functional Integrative Genomics** 3: 25-32. On-line version: October 1, 2002:, DOI 10.1007/s10142-002-0078-y.

203. Larsen, E., M. R. Alfenito, W. R. Briggs and V. Walbot. 2003. A carnation anthocyanin mutant is complemented by *Bz2*, a maize glutathione *S*-transferase. **Plant Cell Reports** 21: 900 - 904.

202. Walbot, V. and G. N. Rudenko. 2002. *MuDR/Mu* transposons of maize. In: **Mobile DNA II**, eds. N. L. Craig, R. Craigie, M. Gellert, A. Lambowitz. Amer. Soc. Microbiology, Washington, D. C. pp. 533-564.

201. Cho, Y., J. Fernandes, S.-H. Kim, and V. Walbot. 2002. Gene expression profile comparisons distinguish seven organs of maize. **Genome Biology** 3:research0045.1-0045.16. http://genomebiology .com/2002/3/9/research/0045.

200. Ono, A.. S.-H. Kim, and V. Walbot. 2002. Subcellular localization of MURA and MURB proteins encoded by the maize *MuDR* transposon. **Plant Molecular Biology** 50: 599-611.

199. Brendel, V., S. Kurtz, and V. Walbot. 2002. Comparative genomics of *Arabidopsis* and maize: prospects and limitations. **Genome Biology** 3: 1005.1-1005.6

198. Fernandes, J., V. Brendel, X. Gai, S. Lal, V. L. Chandler, R. Elumalai, D. W. Galbraith, E. Pierson, and V. Walbot. 2002. Comparison of RNA expression profiles based on maize EST frequency analysis and microarray hybridization. **Plant Physiology** 128: 896-910.

197. Bennetzen, J., E. Buckler, V. Chandler, J. Doebley, J. Dorweiler, B. Gaut, M. Freeling, S. Hake, E. Kellogg, R. S. Poethig, V. Walbot, and S. Wessler. 2000. Genetic evidence and the origin of maize. **Latin American Antiquity** 12: 84-86.

196. Raizada, M. N., G. L. Nan and V. Walbot. 2001. Somatic and germinal mobility of the *RescueMu* transposon in transgenic maize. **Plant Cell** 13: 1587-1608.

195. Cho, Y. and V. Walbot. 2001. Computational methods for gene annotation: the *Arabidopsis* genome. **Current Opinion in Biotechnology** 12: 126-130.

194. Walbot, V. 2001. Imprinting of *R-r*, paramutation of *B-I* and *Pl*, and epigenetic silencing of *MuDR/Mu* transposons in *Zea mays* L. are co-ordinately affected by inbred background. **Genetical Research** 77: 219-226.

193. Walbot, V. and D. A. Petrov. 2001. Gene galaxies in the maize genome. **Proc. Natl. Acad. Sci. USA** 98: 8163-8164.

192. Rudenko, G. N. and V. Walbot. 2001. Expression and post-transcriptional regulation of maize transposable element *MuDR* and its derivatives. **Plant Cell** 13:553-570.

191. Walbot, V. 2001. Genomics: New tools to analyze genetic and biochemical diversity. **Recent Adv. Phytochemistry**, Vol. 35, eds. John T. Romeo, James A. Saunders, and Benjamin F. Matthews. New York : Elsevier Science Ltd. pp. 1-14.

190. Mueller, L. A. and V. Walbot. 2001. Models for anthocyanin sequestration. **Recent Adv. Phytochemistry**, Vol. 35, eds. John T. Romeo, James A. Saunders, and Benjamin F. Matthews. New York : Elsevier Science Ltd. pp. 297-317.

189. Walbot, V. 2001. Impact of transposons on the maize genome. Ch. 3 In: Cronk, Q.C.B., Bateman, R. and Hawkins, J.A. (eds) **Developmental Genetics and Plant Evolution**. London: Taylor and Francis.

188. Raizada, M. N., M.-I. Benito and V. Walbot. 2001. The *MuDR* transposon terminal inverted repeat contains a complex plant promoter directing distinct somatic and germinal programs. **Plant J** 25: 1-15.

187. Raizada, M. N., K. V. Brewer and V. Walbot . 2001. A maize *MuDR* transposon promoter shows limited autoregulation. **Molecular Genet. Genomics** 265: 82-94.

186. Walbot, V. 2000. Green chapter in the book of life. **Nature** 408: 794-795.

185. Mueller, L. A., C. D. Goodman, R. A. Silady and V. Walbot. 2000. AN9, a Petunia glutathione *S*-transferase required for anthocyanin sequestration, is a flavonoid-binding protein. **Plant Physiology** 123: 1561-1570.

184. Edwards, R., Dixon, D. P. and V. Walbot. 2000. Plant glutathione *S*-transferases: multifunctional enzymes aiding survival in a hostile world. **Trends in Plant Science** 5: 193-198.

183. Raizada, M. and V. Walbot. 2000. The late developmental pattern of *Mu* transposon excision is conferred by a CaMV 35S-driven MURA cDNA in transgenic maize. **Plant Cell** 12: 5-22.

182. Walbot, V. 2000. Saturation mutagenesis using maize transposons. **Current Opinion in Plant Biology** 3: 103-107.

181. Gai, X. W., S. Lal, L. Q. Xing, V. Brendel and V. Walbot. 2000. Gene discovery using the maize genome database ZmDB. **Nucleic Acids Research** 28: 94-96. http://www3.oup.co.uk/nar/Volume_28/Issue_01/gkd073_gml.abs.html

180. Walbot, V., L. Mueller, R. A. Silady, and C. D. Goodman. 2000. Do glutathione S-transferases acts as enzymes or as carrier proteins for their natural substrates? In: Sulfur nutrition and sulfur assimilation in higher plants: molecular, biochemical and physiological aspects, pp. 155-

179. Latijnhouwers, M. J., C. F. Pairoba, V. Brendel, V. Walbot, and J.-C. Carle-Urioste. 1999. Test of the combinatorial model of intron recognition in a native maize gene. **Plant Molecular Biology** 41: 637-644.

178. Walbot, V. 1999. Genes, Genomes, Genomics: What Can Plant Biologists Expect from the 1998 NSF Plant Genome Research Program? **Plant Physiology** 119: 1151-1156.

177. Walbot, V. 1999. UV-B damage amplified by transposons in maize. **Nature** 397: 398-399.